

**REMARKS**

Applicants hereby cancel claims 1, 34, 35 and 39-46, add new claims 47-57, and amend claims 2, 4, 6, 8, 10, 12-19 and 26-32.

In response to the Notice of Non-Compliant Amendment, Applicant has submitted new claims 48-57 replacing prior claims 34, 35 and 39-46 as they were previously submitted. The former claims are canceled and restated as claims 48-57 in order to resolve the issue of there being two separate claim 34's in the application, as pointed out in the Notice of Non-Compliant Amendment.

Other claim cancellations, additions and amendments are those made in the prior non-compliant amendment, in response to the Office Action dated January 19, 2007.

As was set forth in the prior non-compliant Response and Amendment, Applicants note with appreciation the Examiner's decision to examine all pending claims.

As was set forth in the prior non-compliant Response and Amendment, the amendment to claim 4 incorporates the contents of canceled claim 1 (from which claim 4 formerly depended) and also responds to the Examiner's rejection of claim 1 under § 101 for claiming non-statutory subject matter, and under § 112 for being indefinite.

As was set forth in the prior non-compliant Response and Amendment, the amendments to claims 2, 12 and 14 respond to the Examiner's rejection of those claims under § 112 for being indefinite.

As was set forth in the prior non-compliant Response and Amendment, the amendments to claims 2, 6, 8, 10, 12-19 and 26-32 change the dependencies of these claims so that they now all depend directly or indirectly from amended claim 4.

Amendments to the claims are not an acquiescence to any of the rejections. Silence with regard to any of the Examiner's rejections is not an acquiescence to such. Specifically, silence with regard to Examiner's rejection of a dependent claim, when such claim depends from an independent claim that Applicants consider allowable for reasons provided herein, is not an acquiescence to such rejection of the dependent claim(s), but

rather a recognition by Applicants that such previously lodged rejection is moot based on Applicants' remarks and/or amendments relative to the independent claim (that Applicants consider allowable) from which the dependent claim(s) depends. Furthermore, any cancellations of and amendments to the claims are being made solely to expedite prosecution of the instant application. Applicants reserve the option to further prosecute the same or similar claims in the instant or a subsequent application.

Upon entry of the Amendment, claims 2-22, 26-33 and 47-57 are pending in the present application.

#### Information Disclosure Statement

As was set forth in the prior non-compliant Response and Amendment, Applicants note that the Examiner did not consider reference CC because it lacked a publication date. Applicants respectfully suggest that the URL provided has a 1999 date in its text, and is linked from other pages which state that they were last modified in 1999 or 2000.

#### Specification

As was set forth in the prior non-compliant Response and Amendment, Applicants have amended the specification to provide that the term "GenBank" appears as "GENBANK." Applicants believe that generic terminology is provided to accompany each use of trademarked terminology.

#### Claim Amendments

As was set forth in the prior non-compliant Response and Amendment, Claim 4 has been amended to require

based upon the computed first percent identity and second percent identity outputting a result to at least one of a user, a storage device, a computer, or a display.

Support for this amendment is provided, without limitation, at page 7, lines 17-19, page 10, lines 2-4, page 14, line 24 to page 15, line 4 and page 15, lines 14-20. No new matter is involved.

As was set forth in the prior non-compliant Response and Amendment, the amendments to claims 2, 12 and 14, and amendments to claim 4 other than that set forth above, clarify claim language such as by providing antecedent bases. No new matter is involved.

New claim 47 includes material previously found in claims 4, 15, 16, 19 and 26. No new matter is involved.

New claims 48-57 represent previous claims 34, 35 and 39-46. No new matter is involved.

As was set forth in the prior non-compliant Response and Amendment, the remaining claim amendments change claim dependencies. No new matter is involved.

#### Section 101 Rejections

For the convenience of the Examiner, the remarks made in the prior non-compliant Response and Amendment with respect to Section 101 rejections are repeated herein, with references to now-canceled claims 34, 35 and 39-46 replaced by references to new claims 48-57 which replace them to cure the non-compliant numbering.

The Examiner rejected pending claims 1-22, 26, 27, 32, 33, 49 (previously 35) and 50-57 (previously 39-46) as being directed at nonstatutory subject matter, in that they did not produce useful, concrete and tangible results. Applicant does not concede that the Examiner was correct in his rejections of these claims. However, Applicant has amended claim 4 (from which all claims except new claim 47 now depend) to specify useful, concrete and tangible results. The amendment to claim 4 requires

based upon the computed first percent identity and second percent identity outputting a result to at least one of a user, a storage device, a computer, or a display.

Applicants respectfully suggest that amended claim 4 provides for useful, concrete and tangible results. Since all other claims except new claim 47 now depend directly or indirectly from claim 4, they also provide for useful, concrete and tangible results. (New claim 47 also provides for useful, concrete and tangible results, since it incorporates the above language as well.)

#### Section 112 Rejections

For the convenience of the Examiner, the remarks made in the prior non-compliant Response and Amendment with respect to Section 112 rejections are repeated herein, with references to now-canceled claims 34, 35 and 39-46 replaced by references to new claims 48-57 which replace them to cure the non-compliant numbering.

The Examiner has rejected claims 1-22, 26-33, 48-49 (previously 34-35), and 50-57 (previously 39-46) under Section 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter Applicants regard as the invention.

#### Claim 1

The Examiner rejected claim 1 (and therefore claims 2-22, 26-33, 48-49, and 50-57 which depend therefrom) on the ground that there was no antecedent basis for the term “alignments” in claim 1, prior to its use in the phrase “associating error with alignments.” Applicants have amended claim 4 (into which the limitations of canceled claim 1 have been inserted) to provide an antecedent basis for “alignments” by inserting the following language prior to the reference to “associating error with alignments” cited by the Examiner:

“determining a plurality of alignments of the first sequence and the second sequence.”

Applicants respectfully suggest that this provides an antecedent basis for “alignments.”

The Examiner further rejected claim 1 on the ground that it was unclear “what constitutes an error.” Applicants respectfully suggest that the specification states what is an error at, without limitation, ¶ 42, which states “...determining a number (e.g., an error) based on the number of mismatches ....”

Applicants respectfully request that based upon the above amendment and response, the Examiner should remove the rejection of claim 4 (and therefore claims 2-3, 5-22, 26-33, 48-49, and 50-57 which depend therefrom) on § 112 grounds.

#### Claim 2

The Examiner rejected claim 2 on the ground that it was unclear when during the course of the steps in claim 1 the mismatch or alignment number of claim 2 was determined. Applicants have amended claim 2 to clarify that the mismatch or alignment number is determined “based on the alignment having the smallest error.” This makes clear that it cannot be determined before that alignment has been identified, as is done in step (c) of claim 4.

Applicants respectfully request that based upon this amendment and response, the Examiner should remove the rejection of claim 2 on § 112 grounds.

#### Claims 3, 5 and 7

The Examiner rejected claims 3, 5 and 7 on the ground that it was unclear what positive and negative matches were. Applicants respectfully suggest that perfect and positive matches are defined in ¶ 39, and that it is implicit in these definitions that a negative match is a match that fails to fall into one of those two categories.

Applicants respectfully request that based upon this response, the Examiner should remove the rejection of claims 3, 5 and 7 on § 112 grounds.

Claim 12

The Examiner rejected claim 12 on the ground that there was no antecedent basis for the term “gaps” as used in the phrase “based on the gaps.” Applicants have amended claim 12 to provide an antecedent basis by adding the following language prior to the phrase “based on the gaps”:

“for the alignment having the smallest error, determining a number of gaps in the first sequence, and a number of gaps in the second sequence”

Applicants respectfully request that based upon this amendment and response, the Examiner should remove the rejection of claim 12 on § 112 grounds.

Claim 13

The Examiner rejected claim 13 on the ground that it was unclear when during the course of the steps in claim 1 the step of claim 13 was to occur. Applicants respectfully suggest that, if the steps of claim 13:

providing at least one database, the at least one database including at least one sequence, and, retrieving at least one of the first sequence and the second sequence from the at least one database

are to be carried out, the “database including at least one sequence” must be provided, and the “at least one ....sequence” must be retrieved from the database, prior to the steps of claim 4 in which the sequences are used, including step (a).

Applicants respectfully request that based upon this response, the Examiner should remove the rejection of claim 13 on § 112 grounds.

Claim 14

The Examiner rejected claim 14 on the ground that the language “at least one of: at least ...” was unclear. Applicants have amended claim 14 to clarify the language.

Applicants respectfully request that based upon this amendment and response, the Examiner should remove the rejection of claim 14 on § 112 grounds.

Claims 17 and 56 (formerly 45)

The Examiner rejected claims 17 and 56 (formerly 45) on the ground that the language “associating error includes computing a string edit distance” was unclear. Applicants respectfully suggest that ¶¶ 36, 42 of the specification state that a string edit distance is the minimum number of character inserts and/or changes required to convert one string/sequence to another, and that an error may be based on a number of mismatches. (Applicants respectfully refer the Examiner to these paragraphs for the full definition.)

Applicants respectfully request that based upon this response, the Examiner should remove the rejection of claims 17 and 56 (formerly 45) on § 112 grounds.

Section 102 Rejections

For the convenience of the Examiner, the remarks made in the prior non-compliant Response and Amendment with respect to Section 102 rejections are repeated herein, with references to now-canceled claims 34, 35 and 39-46 replaced by references to new claims 48-57 which replace them to cure the non-compliant numbering.

The Examiner has rejected claims 1-3, 14, 28, 29 and 31 as being anticipated by Seguritan.

Applicants have cancelled claim 1, and have amended rejected claims 2-3, 14, 28, 29 and 31 to depend directly or indirectly from claim 4, which the Examiner did not reject on the basis of Seguritan. Because amended claim 4 now is allowable based on the amendments discussed above with respect to the § 101 and § 112 rejections, claims 2-3, 14, 28, 29 and 31, which now depend directly or indirectly from amended claim 4, also are allowable.

New Claim 47

Applicants have added new claim 47. Because that claim includes material from amended claim 4, as well as material from claims 15, 16, 19 and 26, and those claims are now allowable, claim 47 should be allowed as well.

New Claims 48-57

Applicants have added new claims 48-57 as discussed above, in response to the Notice of Non-Compliant Amendment. The reasons why those claims are allowable have been discussed above.

**CONCLUSION**

In view of the foregoing amendment and remarks, Applicants consider the Response herein to be fully responsive to the referenced Office Action, and respectfully submits that all of the pending claims are now in condition for allowance. Early and favorable reconsideration is therefore respectfully solicited.

If there are any remaining issues or the Examiner believes that a telephone conversation with Applicants' attorney would be helpful in expediting the prosecution of this application, the Examiner is invited to call the undersigned at 617-832-1118.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those which may otherwise be provided for in documents accompanying this paper; however, in the event that additional extensions of time are necessary, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a). Should an extension of time be required, Applicants request that the extension fee and any other fee required for timely consideration of this application be charged to Deposit Account **No. 06-1448, Reference GIO-101.**

The Commissioner is hereby authorized to charge any under-payments or credit any overpayments to our Deposit Account No. 06-1448



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